National Climatic Data Center

DATA DOCUMENTATION

FOR

DATA SET 1149 (DSI-1149)

SEAS Marine Observations

March 20, 2003

National Climatic Data Center
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1. Abstract: Shipboard Environmental Data Acquisition System (SEAS) transmits data through either the GOES or INMARSAT C satellites to NOAA for use in weather, climatology and ocean models. The satellite transmitted observations are recorded and quality controlled on a shipboard computer. The data are electronically transferred by the National Ocean Service (NOS) to the NCDC for further quality control and archive. The original (as received) data set ID is TD1149, now identified by Data Set Identifier 1149 (DSI-1149).

2. Element Names and Definitions: In the following data record description, a solidis represents missing data. When using fractions of units, all decimal points are implied. The term main synoptic hour refers to the worldwide weather reporting schedule of 0000, 0600, 1200, and 1800 UTC.

DATA RECORD

Year: The last two digits of the year (UTC) in which the data were observed.

Month: The month (UTC) in which the data are observed. Range of values is from 01 to 12.

Day: Day of the month (UTC). Range of values is from 01 to 31.

Hour: The time the observation is made, to the nearest hour (UTC). Range of values is from 00 to 23.

Minute: The time the observation is made, to the nearest minute (UTC). Range of values is from 00 to 59.

Second: The time the observation is made, to the nearest second (UTC). Range of values is from 00 to 59.

Call Sign (BBXX): The ship's radio call sign. A unique four to seven digit identifier consisting of letters and numbers. Value is left justified.

DAY (YY): The day of the month UTC. This may differ from day in positions 005-006 due to rounding to nearest main synoptic hour.

Hour (GG): The hour in positions 007-008 rounded to nearest main synoptic hour.

Wind Indicator (i_w)

3 = Wind speed is estimated; units is knots
4 = Wind speed is measured with an anemometer; units is knots

Position Indicator (99): Group indicator for ships position, always 99.

Latitude ($L_aL_aL_a$): Latitude in whole degrees and tenths. Range of values is from 000 to 900.

Quadrant (Q_c): Quadrant of the globe.

1 = North Latitude, East Longitude
3 = South Latitude, East Longitude
5 = South Latitude, West Longitude
7 = North Latitude, West Longitude

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Longitude ($L_oL_oL_oL_o$): Longitude in whole degrees and tenths. Range of values is from 0000 to 1800.

Precipitation Data Indicator (i_R): Not normally measured aboard ship. Always coded as 4.

Weather Data Indicator (i_x)

1 = Weather report included
3 = Weather report omitted

Height of Lowest Cloud (h): Estimated height of the lowest cloud base.

Code	Height in meters	Height in feet
0	0 to 50	160 or less
1	50 to 100	160 to 330
2	100 to 200	330 to 660
3	200 to 300	660 to 1000
4	300 to 600	1000 to 2000
5	600 to 1000	2000 to 3300
6	1000 to 1500	3300 to 5000
7	1500 to 2000	5000 to 6600
8	2000 to 2500	6600 to 8200
9	2500+ or no clouds	8300+ or no clouds
/	unknown	unknown

Visibility (VV): The greatest distance from the observer that an object of known characteristics can be seen and identified.

Code	Visibility in m/km
90	less than 50 m
91	50 but less than 200 m
92	200 but less than 500 m
93	500 but less than 1000 m
94	1 but less than 2 km
95	2 but less than 4 km
96	4 but less than 10 km
97	10 but less than 20 km
98	20 but less than 50 km
99	50+ km

Total Cloud Amount (N): A straightforward estimate in eighths (oktas) of how much of the sky is covered with clouds.

Code	Fraction of sky covered with clouds
0	Cloudless
1	1 eighth or less, but not zero
2	2 eighths
3	3 eighths
4	4 eighths
5	5 eighths
6	6 eighths
7	7 eighths or more, but not totally covered
8	8 eighths, sky completely covered by clouds

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9	Sky obscured by fog, snow, or other meteorological phenomena
/	Cloud cover indiscernable for reasons other than code 9, or observation is not made.

Wind Direction (dd): The average direction of the wind over the ten minute period immediately preceding the observation. Reported in tens of degrees.

00	Calm
01	5 - 14 degrees
02	15 - 24 degrees
03	25 - 34 degrees
04	35 - 44 degrees
05	45 - 54 degrees
06	55 - 64 degrees
07	65 - 74 degrees
08	75 - 84 degrees
09	85 - 94 degrees
10	95 - 104 degrees
11	105 - 114 degrees
12	115 - 124 degrees
13	125 - 134 degrees
14	135 - 144 degrees
15	145 - 154 degrees
16	155 - 164 degrees
17	165 - 174 degrees
18	175 - 184 degrees
19	185 - 194 degrees
20	195 - 204 degrees
21	205 - 214 degrees
22	215 - 224 degrees
23	225 - 234 degrees
24	235 - 244 degrees
25	245 - 254 degrees
26	255 - 264 degrees
27	265 - 274 degrees
28	275 - 284 degrees
29	285 - 294 degrees
30	295 - 304 degrees
31	395 - 314 degrees
32	315 - 324 degrees
33	325 - 334 degrees
34	335 - 344 degrees
35	345 - 354 degrees
36	355 - 4 degrees
99	variable, or all directions

Wind Speed (ff): The average speed of the wind over the ten-minute period immediately preceding the observation. Reported in tens and units of knots, values in excess of 99 knots are coded as 99 and reported in the 00fff group.

Group Indicator (00): Indicator for the high-speed wind group, always 00.

High Speed Wind (fff): This group is used only to report very high-speed wind of 99 knots or greater. Range of values is from 099 to 999.

Group Indicator (1): Indicator for dry bulb temperature, always 1.

Sign of Dry Bulb (s_n): Sign of temperature.

0 = Positive or zero
1 = Negative

Dry Bulb Temperature (TTT): Air temperature in degrees and tenths Celsius. Range of values from 000 to 999.

Group Indicator (2): Indicator for dew point temperature, always 2.

Sign of Dew Point (s_n): Sign of dew point temperature.

0 = Positive or zero
1 = Negative

Dew Point Temperature ($T_dT_dT_d$): Dew point temperature in degrees and tenths Celsius. Range of values from 000 to 999.

Group Indicator (4): Indicator for sea-level pressure, always 4.

Sea Level Pressure (PPPP): Sea-level pressure, in millibars and tenths. If the value is 1000.0 millibars or greater, the thousands digit is omitted.

Group Indicator (5): Indicator for pressure tendency group, always 5.

Pressure Change Characteristic (a): Pressure characteristic during the three hours before observation time.

0 = Increasing, then decreasing; atmospheric pressure same or higher than 3 hours ago.
1 = Increasing, then steady; or increasing then increasing more slowly; atmospheric pressure now higher than 3 hours ago.
2 = Increasing (steadily or unsteadily) atmospheric pressure now higher than 3 hours ago.
3 = Decreasing or steady, then increasing; or increasing then increasing more rapidly; atmospheric pressure now higher than 3 hours ago.
4 = Steady; atmospheric pressure same as 3 hours ago.
5 = Decreasing, then increasing; atmospheric pressure the same or lower than 3 hours ago.
6 = Decreasing, then steady, or decreasing then decreasing more slowly; atmospheric pressure now lower than 3 hours ago.
7 = Decreasing (steadily or unsteadily) atmospheric pressure now lower than 3 hours ago.
8 = Steady or increasing, then decreasing; or decreasing then decreasing more rapidly; atmospheric pressure now lower than 3 hours ago.

Pressure Change Amount (ppp): Net pressure change in tens, units, and tenths of millibars over the three hours prior to observation time. Range of values is from 000 to 999.

Group Indicator (7): Indicator for present and past weather group, always 7.

Present Weather (ww): Present weather refers to the atmospheric phenomena which are occurring at the time of observation, or which have occurred during the hour preceding the time of observation.

00 = Cloud development not observed.
01 = Clouds generally dissolving or becoming less developed.
02 = State of the sky unchanged.
03 = Clouds generally forming or developing.
04 = Visibility reduced by smoke.
05 = Haze
06 = Widespread dust in suspension in the air, not raised by wind, at or near the station at the time of observation.
07 = Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirls or sand whirls and no duststorm or sandstorm seen.
08 = Well developed dust whirls or sand whirls seen at or near the station during the preceding hour or at the time of observation, but no duststorm or sandstorm.
09 = Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour.
10 = Light fog (visibility 1,100 yards or more). Synonymous with European term "Mist".
11 = Patches of shallow fog or ice fog at the station, not deeper than about 10 meters.
12 = More or less continuous shallow fog or ice fog at the station, not deeper than about 10 meters.
13 = Lightning visible, no thunder heard.
14 = Precipitation within sight, not reaching the surface of the sea.
15 = Precipitation within sight, reaching the surface of the sea, but more than 5 km. from the ship.
16 = Precipitation within sight, reaching the surface of the sea, near to, but not at the ship.
17 = Thunderstorm, but no precipitation at the time of observation.
18 = Squalls at or within sight of the ship during the preceding hour or at the time of observation.
19 = Funnel cloud or Waterspout at or within sight of the ship during the preceding hour or at the time of observation.

The following phenomena occurred at the ship during the preceding hour but not at the time of observation.

20 = Drizzle (not freezing) or snow grains.
21 = Rain (not freezing).
22 = Snow
23 = Rain and snow or ice pellets, type (a).
24 = Freezing drizzle or freezing rain.
25 = Shower(s) of rain.
26 = Shower(s) of snow or of rain and snow.
27 = Shower(s) of hail (ice pellets, type (b), snow pellets), or of rain and hail (ice pellets, type (b), snow pellets).
28 = Fog or ice fog.
29 = Thunderstorm (with or without precipitation).

Present weather codes 30-99 refer to phenomena occurring at the ship at time of observation.

30 = Slight or moderate duststorm or sandstorm has decreased during the preceding hour.

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31 = Slight or moderate duststorm or sandstorm, no appreciable change during the preceding hour.
32 = Slight or moderate duststorm or sandstorm has begun or has increased during the preceding hour.
33 = Severe duststorm or sandstorm has decreased during the preceding hour.
34 = Severe duststorm or sandstorm, no appreciable change during the preceding hour.
35 = Severe duststorm or sandstorm has begun or has increased during the preceding hour.
36 = Slight or moderate drifting snow generally low (below eye level) less than 6 feet.
37 = Heavy drifting snow generally low (below eye level) less than 6 feet.
38 = Slight or moderate blowing snow generally high (above eye level) 6 feet or more.
39 = Heavy blowing snow generally high (above eye level) 6 feet or more.
40 = Fog or ice fog at a distance at the time of observation, but not at the ship during the preceding hour, the fog or ice fog extending to a level above that of the observer.
41 = Fog or ice fog in patches.
42 = Fog or ice fog, sky visible has become thinner during the preceding hour.
43 = Fog or ice fog, sky invisible has become thinner during the preceding hour.
44 = Fog or ice fog, sky visible no appreciable change during the preceding hour.
45 = Fog or ice fog, sky invisible no appreciable change during the preceding hour.
46 = Fog or ice fog, sky visible has begun or has become thicker during the preceding hour.
47 = Fog or ice fog, sky invisible has begun or has become thicker during the preceding hour.
48 = Fog, depositing rime, sky visible.
49 = Fog, depositing rime, sky invisible.
50 = Drizzle, not freezing, intermittent slight at time of observation.
51 = Drizzle, not freezing, continuous slight at time of observation.
52 = Drizzle, not freezing, intermittent moderate at time of observation.
53 = Drizzle, not freezing, continuous moderate at time of observation.
54 = Drizzle, not freezing, intermittent heavy (dense) at time of observation.
55 = Drizzle, not freezing, continuous heavy (dense) at time of observation.
56 = Drizzle, freezing, slight.
57 = Drizzle, freezing, moderate or heavy (dense).
58 = Drizzle and rain, slight.
59 = Drizzle and rain, moderate or heavy.
60 = Rain, not freezing, intermittent, slight at time of observation.
61 = Rain, not freezing, continuous, slight at time of observation.
62 = Rain, not freezing, intermittent, moderate at time of observation.
63 = Rain, not freezing, continuous, moderate at time of observation.
64 = Rain, not freezing, intermittent, heavy at time of observation.
65 = Rain, not freezing, continuous, heavy at time of observation.
66 = Rain, freezing, slight.
67 = Rain, freezing, moderate or heavy.
68 = Rain or drizzle and snow, slight.
69 = Rain or drizzle and snow, moderate or heavy.

70 = Intermittent fall of snowflakes.
71 = Continuous fall of snowflakes slight at time of observation.
72 = Intermittent fall of snowflakes moderate at time of observation.
73 = Continuous fall of snowflakes moderate at time of observation.
74 = Intermittent fall of snowflakes heavy at time of observation.
75 = Continuous fall of snowflakes heavy at time of observation.
76 = Ice prisms (with or without fog).
77 = Snow grains (with or without fog).
78 = Isolated star-like snow crystals (with or without fog).
79 = Ice pellets, type (a) (sleet, U.S. definition).
80 = Rain shower(s), slight.
81 = Rain shower(s), moderate or heavy.
82 = Rain shower(s), violent.
83 = Shower(s) of rain and snow mixed, slight.
84 = Shower(s) or rain and snow mixed, moderate or heavy.
85 = Snow shower(s), slight.
86 = Snow shower(s), moderate or heavy.
87 = Slight showers of snow pellets or ice pellets, type (b), with or without rain or rain and snow mixed.
88 = Moderate or heavy showers of snow pellets or ice pellets (b), with or without rain or rain and snow mixed.
89 = Slight showers of hail with or without rain or rain and snow mixed, not associated with thunder.
90 = Moderate or heavy showers of hail, with or without rain or rain and snow, slight mixed, not associated with thunder.
91 = Slight rain at time of observation, thunderstorm during preceding hour but not at observation.
92 = Moderate or heavy rain at time of observation, thunderstorm during preceding hour but not at observation.
93 = Slight snow, or rain and snow mixed or hail, at time of observation with thunderstorm during the preceding hour but not at time of observation.
94 = Moderate or heavy snow, or rain and snow mixed, or hail, at time of observation with thunderstorm during the preceding hour but not at time of observation.
95 = Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation.
96 = Thunderstorm, slight or moderate, with hail at time of observation.
97 = Thunderstorm, heavy, without hail but with rain and/or snow at time of observation.
98 = Thunderstorm combined with duststorm or sandstorm at time of observation.
99 = Thunderstorm, heavy, with hail at time of observation.

Primary Past Weather (W_1): Past weather refers to the type(s) of weather which occurred since the previous main synoptic hour. If two or more type of reportable weather occurred during the period, only the two highest code figures are encoded; the highest code figure for W_1, the second highest for W_2.

0 = Cloud covering 1/2 or less of the sky throughout the appropriate period.
1 = Cloud covering more than 1/2 of the sky during part of the appropriate period and covering 1/2 or less during part of the period.
2 = Cloud covering more than 1/2 of the appropriate period.
3 = Sandstorm, duststorm or blowing snow.
4 = Fog or ice fog or thick haze including thick smoke.

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5 = Drizzle
6 = Rain
7 = Snow, or rain and snow mixed.
8 = Shower
9 = Thunderstorm with or without precipitation.

Secondary Past Weather (W_2): See Primary Past Weather listed above.

Group Indicator (8): Group Indicator for clouds, always 8.

Amount of Low or Middle Cloud (N_h): As reported for low clouds, or if none are present, middle clouds, in oktas.

Code	Fraction of sky covered
0	No C_L or C_M clouds present
1	1 eighth or less, but not zero
2	2 eighths
3	3 eighths
4	4 eighths
5	5 eighths
6	6 eighths
7	7 eighths or more, but not totally covered
8	8 eighths, sky completely covered by clouds
9	sky obscured by fog, snow, or other meteorological phenomena
/	Cloud cover indiscernable for reasons other than code 9, or observation is not made.

Type of Low Cloud (C_L): A visual observation measuring Stratocumulus, Stratus, Cumulus and Cumulonimbus type clouds.

0 = No Stratocumulus, Stratus, Cumulus or Cumulonimbus (no low clouds present)
1 = Cumulus with little vertical extent and seemingly flattened, or ragged Cumulus other than of bad weather, or both.
2 = Cumulus of moderate or strong vertical extent, generally with protuberances in the form of domes or towers, either accompanied or not by other Cumulus or by Stratocumulus, all having their base at the same level.
3 = Cumulonimbus, the summits of which, at least partially, lack sharp outlines but are neither clearly fibrous (cirriform) nor in the form of an anvil; Cumulus, Stratocumulus or Status may also be present.
4 = Stratocumulus formed by the spreading out of Cumulus; Cumulus may also be present.
5 = Stratocumulus not resulting from the spreading out of Cumulus.
6 = Stratus in a more or less continuous sheet or layer, or in ragged shreds, or both, but no Stratus fractus of bad weather.
7 = Stratus fractus of bad weather (generally existing during precipitation and a short time before and after) or Cumulus fractus of bad weather, or both (pannus), usually below Altostratus or Nimbostratus.
8 = Cumulus and Stratocumulus other than that formed from the spreading out of Cumulus; the base of the Cumulus is at a different level from that of the Stratocumulus.
9 = Cumulonimbus, the upper part of which is clearly fibrous (cirriform), often in the form of an anvil; either accompanied or not by Cumulonimbus without anvil or fibrous upper part by Cumulus, Stratocumulus, Stratus or pannus.

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/ = Stratocumulus, Stratus, Cumulus and Cumulonimbus invisible owing to darkness, fog, blowing dust or sand, or other similar phenomena.

Type of Middle Cloud (C_m) A visual observation measuring Altocumulus, Altostratus and Nimbostratus type clouds.

0 = No Atlocumulus, Altostratus or Nimbostratus (no mid clouds present).
1 = Altostratus, the greater part of which is semi-transparent; through this part the sun or moon may be weakly visible, as through ground glass.
2 = Altostratus, the greater part of which is sufficiently dense to hide the sun or moon, or Nimbostratus.
3 = Altocumulus, the greater part of which is semi-transparent; the various elements of the cloud change only slowly and are all at a single level.
4 = Patches (often in the form of almonds or fishes) of Altocumulus, the greater part of which is semi-transparent; the clouds occur at one or more levels and the elements are continually changing in appearance.
5 = Semi-transparent Altocumulus in bands, or Altocumulus in one or more fairly continuous layers (semi-transparent or opaque), progressively invading sky; these Altocumulus clouds generally thicken as a whole.
6 = Altocumulus resulting from the spreading out of Cumulus (or Cumulonimbus).
7 = Altocumulus in two or more layers, usually opaque in places, and not progressively invading the sky; or opaque layer of Altocumulus, not progressively invading the sky; or Altocumulus together with Altostratus or Nimbostratus.
8 = Altocumulus with sproutings in the form of small towers or battlements; or Altocumulus having the appearance of cumuliform tufts.
9 = Altocumulus of a chaotic sky, generally at several levels.
/ = Altocumulus, Altostratus and Nimbostratus invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds.

Type of High Cloud (C_h): A visual observation of Cirrus, Cirrocumulus and Cirrostratus type clouds.

0 = No Cirrus, Cirrocumulus or Cirrostratus (no high clouds present)
1 = Cirrus in the form of filaments, strands or hooks, not progressively invading sky.
2 = Dense Cirrus, in patches or entangled sheaves, which usually do not increase and sometimes seem to be the remains of the upper part of a Cumulonimbus; Cirrus with sproutings in the form of small turrets or battlements, or Cirrus having the appearance of cumuliform tufts.
3 = Dense Cirrus, often in the form of an anvil, being the remains of the upper parts of Cumulonimbus.
4 = Cirrus in the form of hooks or of filaments, or both, progressively invading the sky; they generally become denser as a whole.
5 = Cirrus (often in bands converging towards one point or two opposite points of the horizon) and Cirrostratus, or Cirrostratus alone; in either case, they are progressively invading the sky, and generally growing denser as a whole, but the continuous veil does not reach 45 degrees above the horizon.
6 = Cirrus (often in bands converging towards one point or two opposite points of the horizon) and Cirrostratus, or Cirrostratus alone; in

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either case, they are progressively invading the sky, and generally growing denser as a whole; the continuous veil extends more than 45 degrees above the horizon, without the sky being totally covered.

7 = Veil of Cirrostratus covering the celestial dome.

8 = Cirrostratus not progressively invading the sky and not completely covering the celestial dome.

9 = Cirrocumulus alone, or Cirrocumulus accompanied by Cirrus or both, but Cirrocumulus is predominant. Cirrostratus, invisible owing to darkness, fog, blowing dust or sand or other similar phenomena, or more often because of the presence of a continuous layer of lower clouds.

/ = Cirrus, Cirrocumulus and Cirrostratus invisible owing to darkness, or because of a continuous layer of lower clouds.

Group Indicator (222): Indicator for ship's course and speed, always 222.

Course (D_s): True direction of resultant displacement made good during the three hours preceding the time of observation.

Code	True Direction (course)
0	Ship hove to (not moving)
1	NE
2	E
3	SE
4	S
5	SW
6	W
7	NW
8	N
9	Unknown
/	Not reported

Speed (v_s): Ship's average speed made good during last three hours, in knots.

Code	True Speed
0	0 knots
1	1 to 5 knots
2	6 to 10 knots
3	11 to 15 knots
4	16 to 20 knots
5	21 to 25 knots
6	26 to 30 knots
7	31 to 35 knots
8	36 to 40 knots
9	40+ knots
/	Not reported

Group Indicator (0): Indicator for sea-surface water temperature group, always 0.

Sign of Sea-surface Temperature (s_s): Code to Sign and type of sea-surface temperature measurement.

0 = positive or zero intake measurement

1 = negative intake measurement

2 = positive or zero bucket measurement

3 = negative bucket measurement

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4 = positive or zero hull contact sensor
5 = negative hull contact sensor
6 = positive or zero neither intake, bucket or hull
7 = negative neither intake, bucket or hull

Sea Temperature ($T_wT_wT_w$): Sea-surface water temperature in Celsius degrees and tenths. Range of values from 000 to 999.

Group Indicator (2): Indicator for wind wave group, always 2.

Period of Wind Waves (P_wP_w): Period of wind waves, in seconds. Values range from 00 to 99 or //.

Height of Wind Waves (H_wH_w): Height of wind waves, in half meters, represents the average height of the larger well-formed wind waves.

Code	Height in feet
00	Less than 1
01	1 or 2
02	3 or 4
03	5
04	6 or 7
05	8 or 9
06	10
07	11 or 12
08	13
09	14 or 15
10	16 or 17
11	18
12	19 or 20
13	21 or 22
14	23
15	24 or 25
16	26 or 27
17	28
18	29 or 30
19	31
20	32 or 33
21	34 or 35
22	36
23	37 or 38
24	39 or 40
25	41
26	42 or 43
27	44 or 45
//	Not determined

Group Indicator (3): Indicator for direction of swells, always 3.

Predominant Swell Direction ($d_{w1}d_{w1}$): Direction of primary swell in tens of degrees. Use code table for wind direction (dd).

Secondary Swell Direction ($d_{w2}d_{w2}$): Direction of secondary swell in tens of degrees. Use code table for wind direction (dd).

Group Indicator (4): Indicator for period and height of primary swell, always 4.

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Period of Predominant Swell ($P_{w1}P_{w1}$): Period of the primary swell in seconds. Values range from 00 to 28 or 99.

Height of Primary Swell ($H_{w1}H_{w1}$): The average height of larger well-formed swell in half-meters. Use code table for Height of Wind Wave (H_wH_w).

Group Indicator (5): Indicator for period and height of secondary swell, always 5.

Period of Secondary Swell ($P_{w2}P_{w2}$): Period of the secondary swell in seconds. Values range from 00 to 28 or 99.

Height of Secondary Swell($H_{w2}H_{w2}$): The average height of larger well-formed secondary swell in half-meters. Use code table for Height of Wind Wave (H_wH_w).

Group Indicator (6): Indicator for ice accretion group, always 6.

Causes of Ice Accretion (I_s): Reports the cause of ice accretion on ship.

1 = Icing from ocean spray
2 = Icing from fog
3 = Icing from spray and fog
4 = Icing from rain
5 = Icing from spray and rain

Thickness of Ice Accretion (E_sE_s): Thickness of ice accretion in centimeters.

Rate of Ice Accretion (R_s): Description of the rate of ice accretion.

0 = Ice not building up
1 = Ice building up slowly
2 = Ice building up rapidly
3 = Ice melting or breaking up slowly
4 = Ice melting or breaking up rapidly

Group Indicator (8): Indicator for wet bulb temperature, always 8.

Sign of Wet Bulb (S_w): Sign of wet bulb temperature.

0 = zero or positive
1 = negative

Wet Bulb Temperature ($T_bT_bT_b$): Wet bulb temperature, degrees and tenths celsius. Range of values from 000 to 999.

Concentration of Ice (c_i): Concentration or arrangement of sea ice in priority order.

0 = No sea ice in sight
1 = Ship in open lead more than 1.0 nautical mile wide, or ship in fast ice with boundary beyond limit of visibility
2 = Sea ice present in concentrations less than 3/10 (3/8), open water or very open pack ice
3 = 4/10 to 6/10 (3/8 to less than 6/8), open pack ice
4 = 7/10 to 8/10 (6/8 to less than 7/8), close pack ice
5 = 9/10 or more, but not 10/10 (7/8 to less than 8/8), very close pack ice
6 = Strips and patches of pack ice with open water between

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7 = Strips and patches of close or very close pack ice with areas of lesser concentration between
8 = Fast ice with open water, very open or open pack ice to seaward of the ice boundary
9 = Fast ice with close or very close pack ice to seaward of the ice boundary
/ = Unable to report, because of darkness, lack of visibility, or because ship is more than 0.5 nautical mile away from ice edge

Stage of Development of Ice (S_i): Development stage of sea ice.

0 = New ice only (frazil ice, grease ice, slush, shuga)
1 = Nilas or ice rind, less than 10 cm thick
2 = Young ice (grey ice, grey-white ice), 10-30 cm thick
3 = Predominantly new and/or young ice with some first-year ice
4 = Predominantly thin first-year ice with some new and/or young ice
5 = All thin first-year ice (30-70 cm thick)
6 = Predominantly medium first-year ice (70-120 cm thick) and thick first-year ice (> 120 cm thick) with some thinner (younger) first-year ice
7 = All medium and thick first-year ice
8 = Predominantly medium and thick first-year ice with some old ice (usually more than 2 meters thick)
9 = Predominantly old ice
/ = Unable to report, because of darkness, lack of visibility or because only ice of land origin is visible or because ship is more than 0.5 nautical mile away from ice edge

Ice of Land Origin (b_i): Descriptions of ice of land origin in order of coding priority.

0 = No ice of land origin
1 = 1-5 icebergs, no growlers or bits of icebergs (bergy bits)
2 = 6-10 icebergs, no growlers or bergy bits
3 = 11-20 icebergs, no growlers or bergy bits
4 = Up to and including 10 growlers with bergy bits -- no icebergs
5 = More than 10 growlers and bergy bits -- no icebergs
6 = 1-5 icebergs with growlers and bergy bits
7 = 6-10 icebergs with growlers and bergy bits
8 = 11-20 icebergs with growlers and bergy bits
9 = More than 20 icebergs with growlers and bergy bits -- a major hazard to navigation
/ = Unable to report, because of darkness, lack of visibility or because only sea ice is visible

Bearing of Ice Edge (D_i): Bearing of closest part of principal ice edge.

0 = Ship in shore or flaw lead
1 = Principal ice edge towards NE
2 = Principal ice edge towards E
3 = Principal ice edge towards SE
4 = Principal ice edge towards S
5 = Principal ice edge towards SW
6 = Principal ice edge towards W
7 = Principal ice edge towards NW
8 = Principal ice edge towards N
9 = Not determined (ship in ice)
/ = Unable to report, because of darkness, lack of visibility or because

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only ice of land origin is visible

Ice Situation and Trend (z_i): Present ice situation and trend of conditions during past three hours in order of coding priority.

0 = Ship in open water with floating ice in sight
1 = Ship in easily penetrable ice; conditions improving
2 = Ship in easily penetrable ice; conditions not changing
3 = Ship in easily penetrable ice; conditions worsening
4 = Ship in ice difficult to penetrate; conditions improving
5 = Ship in ice difficult to penetrate; conditions not changing
6 = Ice forming and floes freezing together
7 = Ice under slight pressure
8 = Ice under moderate or severe pressure
9 = Ship beset
/ = Unable to report--because of darkness or lack of visibility

3. Start Date: 190201XX

4. Stop Date: On-going

5. Coverage: World-wide, maritime only. Moving ship observations.

6. How to Order Data:

Ask NCDC's Climate Services about the cost of obtaining this data set.
Phone: 828-271-4800
FAX: 828-271-4876
E-mail: NCDC.Orders@noaa.gov

7. Archiving Data Center:

National Climatic Data Center/NCDC
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001

Phone: 828-271-4800
FAX : 828-271-4876

8. Technical Contact:

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, NC 28801-5001

Phone: 828-271-4996

9. Known Uncorrected Problems: None

10. Quality Statement: Data is interactively quality controlled for limits and time continuity by a shipboard computer system prior to GTS transmission. Software was developed by contract for the National Ocean Services.

11. Essential Companion Data Sets: None.

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12. <u>References and Summary</u>:

National Weather Service Observing Handbook No.1: Marine Surface Weather Observations, August 1995, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Office of Meteorology. Integrated Hydrometeorological Services Core, 1325 East West Highway, Silver Spring, Md.

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